How to Install the mariadb-client in Linux?

written by sysadmin | 26 November 2025

If you want to access MariaDB databases from other hosts, then your device must have a mariadb-client package.

Problem

How to install the mariadb-client in Linux?

Solution

Below is the command to install mariadb-client on some Linux distros:

Ubuntu/Debian

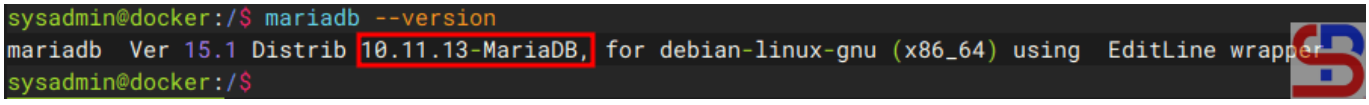
```
sudo apt update
sudo apt install mariadb-client
```

RockyLinux/AlmaLinux/RHEL

```
sudo yum install mariadb-client-*
```

Use the command below to see the version of mariadb-client after you installed the package:

```
mariadb --version
```



Checking MariaDB version

As you can see in the image above, the version of mariadb-client that you installed is version 10.11.3. But you should know that, usually by default, the package provided by the

distro is a stable old version and not the latest stable version. Therefore, if you want the mariadb-client package to use the latest stable version, use the command below:

```
curl -LsS https://r.mariadb.com/downloads/mariadb_repo_setup | sudo bash
```

After that, reinstall the package using the command above (*sudo apt install mariadb-client* or *sudo yum install mariadb-client-**), and your MariaDB version should be the latest.

Note

If you want to know how to access the MariaDB database from another host, you can go to this article.

References

bytebase.com
simplified.guide

How to Access a PostgreSQL Database From Another Host?

written by sysadmin | 26 November 2025

I want to access a PostgreSQL database from another host.

Problem

How to access a PostgreSQL database from another host?

Solution

I have 2 servers, the PostgreSQL server IP is 192.168.56.101, and the Ubuntu server IP is 192.168.56.11. I want to access the PostgreSQL database from the Ubuntu server. By default, use the format below if you want to access PostgreSQL:

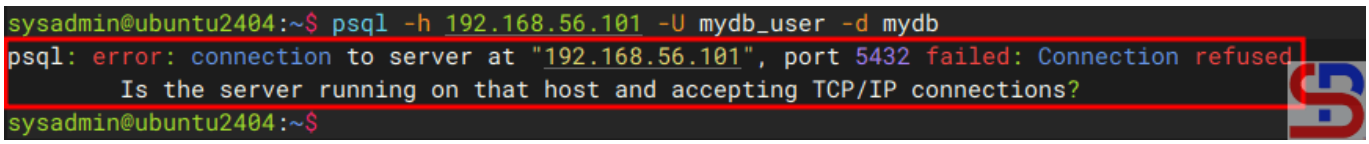
```
psql -h ip_db -u username -d db_name -p port_number
```

By default, the PostgreSQL database uses port 5432, so if you access your PostgreSQL using port 5432, you don't need to write the port. I accessed my PostgreSQL by writing the command:

```
psql -h 192.168.56.101 -u postgres -d mydb
```

But I got an error like the image below:

```
psql: error: connection to server at '192.168.56.101', port 5432 failed:
Connection refused
Is the server running on that host and accepting TCP/IP connections?
```



Error when accessing the PostgreSQL database

The following are the steps to access a PostgreSQL database from another host:

1. Open port

Open port 5432 on each server. If you use RockyLinux/AlmaLinux/RHEL for your servers, use the command below:

```
firewall-cmd --add-port=5432/tcp --permanent
firewall-cmd --reload
```

But if you use Ubuntu/Debian for your server, type the command below:

```
sudo ufw allow 5432
```

2. Config postgresql.conf

In the database server, go to **/etc/postgresql/18/main/postgresql.conf** file if you use PostgreSQL 18, but back up the file first:

```
sudo cp /etc/postgresql/18/main/postgresql.conf
/etc/postgresql/18/main/postgresql.conf.ori
```

After that, change the script below in the file:

```
#listen_addresses = 'localhost'
```

to

```
listen_addresses = '*'
```

3. Configure pg_hba.conf

After that, go to **/etc/postgresql/18/main/pg_hba.conf** if you use PostgreSQL 18, but backup the file first:

```
sudo cp /etc/postgresql/18/main/pg_hba.conf
/etc/postgresql/18/main/pg_hba.conf.ori
```

Then, add your IP host (in this case, IP is 192.168.56.11) like the below script:

```
host    all             all             192.168.56.11/32        scram-sha-256
```

Warning

You must change the file **/etc/postgresql/18/main/postgresql.conf** if you want to use scram-sha-256 encryption as described in this article.

4. Restart PostgreSQL

Restart postgresql service using the command below:

```
sudo systemctl restart postgresql
```

Now, try to access the PostgreSQL again, and you should be able to access the database like the command below:

```
sysadmin@docker:~$ psql -h localhost -U mydb_user -d mydb
Password for user mydb_user:
psql (18.0 (Ubuntu 18.0-1.pgdg24.04+3))
SSL connection (protocol: TLSv1.3, cipher: TLS_AES_256_GCM_SHA384, compression: off, ALPN: postgresql)
Type "help" for help.

mydb=> INSERT INTO employee (name,age,city) VALUES ('queen',23,'Florida');
INSERT 0 1
mydb=> select * from employee;
 name  | age |   city
-------+-----+----------
 bob   |  21 | New York
 John  |  22 | Chicago
 steve |  22 | Kansas
 trump |  20 | Orlando
 paul  |  20 | Texas
 queen |  23 | Florida
(6 rows)

mydb=>
```

Do CRUD on the database

Note

If you have an error when you want to display data, like the image below:

ERROR: permission denied for table employee

```
sysadmin@ubuntu2404:~$ psql -h 192.168.56.101 -U mydb_user -d mydb
Password for user mydb_user:
psql (18.0 (Ubuntu 18.0-1.pgdg24.04+3))
SSL connection (protocol: TLSv1.3, cipher: TLS_AES_256_GCM_SHA384, compression: off, ALPN: postgresql)
Type "help" for help.

mydb=> SELECT * FROM employee;
ERROR:  permission denied for table employee
mydb=>
```

Error when querying in the postgresql

Then you have to change the owner of the database and the tables in the database. You can follow how to change it via this page.

References

dev.to
dba.stackexchange.com
prisma.io
tigerdata.com

How to Change Ownership in PostgreSQL?

written by sysadmin | 26 November 2025

Ownership of a database and the tables in it in PostgreSQL is very crucial because this has a big influence on users who want to carry out CRUD (Create, Read, Update, Delete) activities in a PostgreSQL database. If the user is not the owner of the database and the tables in it, then the user will not be able to perform CRUD.

Problem

How to change ownership in PostgreSQL?

Solution

For example, I have a mydb database and mydb_user as a user. When I access the database using the user mydb_user and perform a query:

```
select * from employee;
```

There is an error as shown below:

```
ERROR: permission denied for table employee
```

```
sysadmin@docker:~$ psql -h localhost -U mydb_user -d mydb
Password for user mydb_user:
psql (18.0 (Ubuntu 18.0-1.pgdg24.04+3))
SSL connection (protocol: TLSv1.3, cipher: TLS_AES_256_GCM_SHA384, compression: off, ALPN: postgresql)
Type "help" for help.

mydb=> select * from employee;
ERROR:  permission denied for table employee
mydb=>
```

Error permission denied

After I searched on the internet, it turned out that this was caused by the user mydb_user not being the owner of the mydb database and the tables in it. To see the owner of the database, you can use the query below:

```
SELECT datname AS database_name,
       pg_catalog.pg_get_userbyid(datdba) AS owner
FROM pg_database;
```

```
mydb=> SELECT datname AS database_name,
       pg_catalog.pg_get_userbyid(datdba) AS owner
FROM pg_database;
 database_name |  owner
---------------+----------
 postgres      | postgres
 template1     | postgres
 template0     | postgres
 mydb          | postgres
(4 rows)

mydb=>
```

List the owners

You can see in the picture above, the postgres user is the owner of the mydb database. This is because when creating the database uses the postgres user and not the mydb_user.

INFO

You can also use an alternative query like the one below to see the owner of your database:

```
SELECT d.datname AS database_name, r.rolname AS owner
FROM pg_database d
JOIN pg_roles r ON d.datdba = r.oid
WHERE d.datname = 'your_database_name';
```

or using the simple query:

```
\l
```

Similarly, if you want to see the owners of the tables in the database (but you must first log in to that database to run this query), use the query below:

```
SELECT tablename, tableowner
FROM pg_tables
WHERE schemaname = 'public';
```

Then there will be a display like the following:

```
postgres=# \c mydb;
You are now connected to database "mydb" as user "postgres".
mydb=# SELECT tablename, tableowner
FROM pg_tables
WHERE schemaname = 'public';
 tablename | tableowner
-----------+------------
 employee  | postgres
(1 row)

mydb=#
```

Show the owner of the tables

You can see in the image above that the owner of the table employee in the mydb database is a postgres user. This is because when creating the tables uses user postgres and user mydb.

INFO

You can also use a query like the one below to see the ownership of all tables in PostgreSQL:

```
SELECT
    schemaname,
```

```
    tablename,
    tableowner
FROM pg_tables
ORDER BY schemaname, tablename;
```

A. Change database owner

If you want to change ownership of the mydb database from user postgres to user mydb_user, then you have to log in to PostgreSQL as an existing user, which in the case of a postgres user:

```
ALTER DATABASE mydb OWNER to mydb_user;
```

Run the query below to check ownership of the database:

```
\l
```

```
mydb=# \l
                                                List of databases
   Name    |  Owner   | Encoding | Locale Provider |   Collate   |    Ctype    | Locale | ICU Rules |   Access privileges
-----------+----------+----------+-----------------+-------------+-------------+--------+-----------+-----------------------
 mydb      | postgres | UTF8     | libc            | en_US.UTF-8 | en_US.UTF-8 |        |           | =Tc/postgres          +
           |          |          |                 |             |             |        |           | postgres=CTc/postgres +
           |          |          |                 |             |             |        |           | mydb_user=CTc/postgres
 postgres  | postgres | UTF8     | libc            | en_US.UTF-8 | en_US.UTF-8 |        |           |
 template0 | postgres | UTF8     | libc            | en_US.UTF-8 | en_US.UTF-8 |        |           | =c/postgres           +
           |          |          |                 |             |             |        |           | postgres=CTc/postgres
 template1 | postgres | UTF8     | libc            | en_US.UTF-8 | en_US.UTF-8 |        |           | =c/postgres           +
           |          |          |                 |             |             |        |           | postgres=CTc/postgres
(4 rows)

mydb=# ALTER DATABASE mydb OWNER to mydb_user;
ALTER DATABASE
mydb=# \l
                                                List of databases
   Name    |   Owner   | Encoding | Locale Provider |   Collate   |    Ctype    | Locale | ICU Rules |    Access privileges
-----------+-----------+----------+-----------------+-------------+-------------+--------+-----------+-------------------------
 mydb      | mydb_user | UTF8     | libc            | en_US.UTF-8 | en_US.UTF-8 |        |           | =Tc/mydb_user         +
           |           |          |                 |             |             |        |           | mydb_user=CTc/mydb_user
 postgres  | postgres  | UTF8     | libc            | en_US.UTF-8 | en_US.UTF-8 |        |           |
 template0 | postgres  | UTF8     | libc            | en_US.UTF-8 | en_US.UTF-8 |        |           | =c/postgres           +
           |           |          |                 |             |             |        |           | postgres=CTc/postgres
 template1 | postgres  | UTF8     | libc            | en_US.UTF-8 | en_US.UTF-8 |        |           | =c/postgres           +
           |           |          |                 |             |             |        |           | postgres=CTc/postgres
(4 rows)

mydb=#
```

Change the database owner

You can see that the owner of the mydb database has changed to user mydb_user. But even so, you still can’t run CRUD on the database because the tables in the database still belong to the postgres user.

B. Change the owner of the table

Still using the postgres user, log in to the mydb database using the command:

```
\c mydb;
```

Then run the query below to change the table, sequence, and view to mydb_user:

```
DO $$
DECLARE
    r RECORD;
BEGIN
    -- Change the owner of all tables
    FOR r IN SELECT schemaname, tablename FROM pg_tables WHERE schemaname =
'public'
    LOOP
        EXECUTE format('ALTER TABLE %I.%I OWNER TO mydb_user;', r.schemaname,
r.tablename);
    END LOOP;

    -- Change the owner of all sequences
    FOR r IN SELECT sequence_schema, sequence_name FROM
information_schema.sequences WHERE sequence_schema = 'public'
    LOOP
        EXECUTE format('ALTER SEQUENCE %I.%I OWNER TO mydb_user;',
r.sequence_schema, r.sequence_name);
    END LOOP;

    -- Change the owner of all views
    FOR r IN SELECT table_schema, table_name FROM information_schema.views
WHERE table_schema = 'public'
    LOOP
        EXECUTE format('ALTER VIEW %I.%I OWNER TO mydb_user;',
r.table_schema, r.table_name);
    END LOOP;
END $$;
```

```
postgres=# \c mydb;
You are now connected to database "mydb" as user "postgres".
mydb=# DO $$
DECLARE
    obj RECORD;
BEGIN
    -- Change the owner of all tables
    FOR obj IN
        SELECT 'TABLE', schemaname, tablename
        FROM pg_tables
        WHERE schemaname = 'public'
    LOOP
        EXECUTE format('ALTER TABLE %I.%I OWNER TO mydb_user;', obj.schemaname, obj.tablename);
    END LOOP;

    -- Change the owner of all sequences
    FOR obj IN
        SELECT sequence_schema, sequence_name
        FROM information_schema.sequences
        WHERE sequence_schema = 'public'
    LOOP
        EXECUTE format('ALTER SEQUENCE %I.%I OWNER TO mydb_user;', obj.sequence_schema, obj.sequence_name);
    END LOOP;

    -- Change the owner of all views
    FOR obj IN
        SELECT table_schema, table_name
        FROM information_schema.views
        WHERE table_schema = 'public'
    LOOP
        EXECUTE format('ALTER VIEW %I.%I OWNER TO mydb_user;', obj.table_schema, obj.table_name);
    END LOOP;
END;
$$;
DO
mydb=#
```

Query to change the owner of the tables

After that, run the command below to view the ownership of the tables in the mydb database:

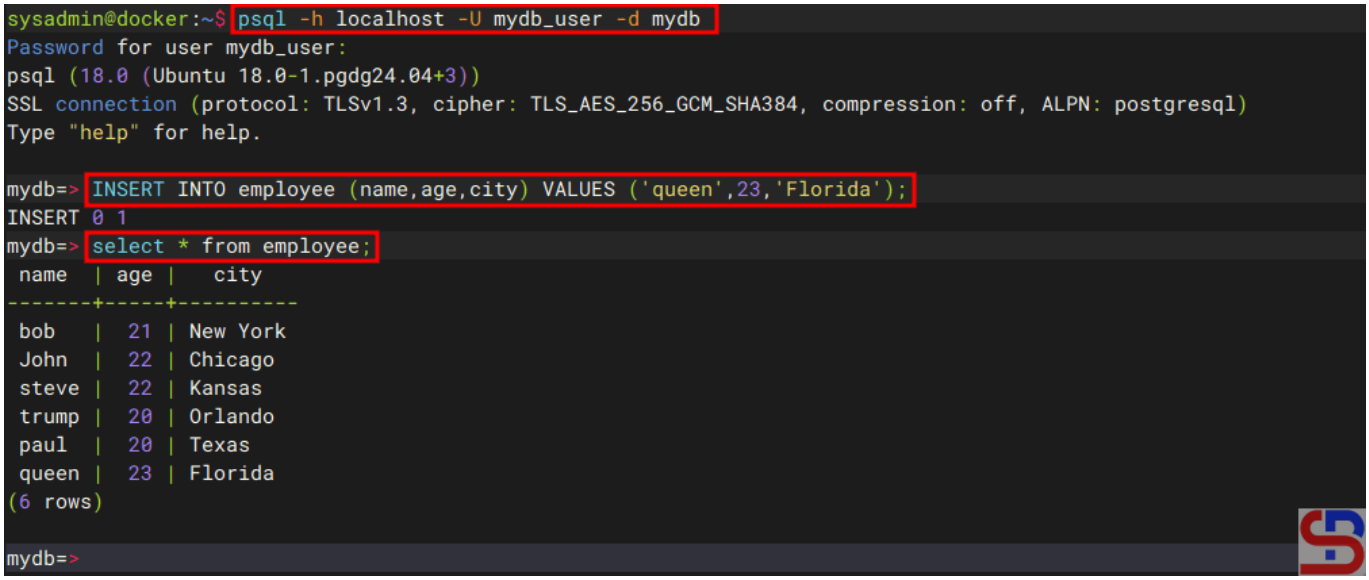
```
SELECT tablename, tableowner
FROM pg_tables
WHERE schemaname="public";
```

```
mydb=# SELECT tablename, tableowner
FROM pg_tables
WHERE schemaname = 'public';
 tablename | tableowner
-----------+------------
 employee  | mydb_user
(1 row)

mydb=#
```

Change the owner of the tables

From the image above, you can see the owner of the tables in the mydb database is not a postgres user but a mydb_user. So, you should be able to do CRUD using the mydb_user user as shown in the image below:



Do CRUD on the database

Note

As a reminder, to create databases and tables in the database, you should not use postgres user but create a new user because it is very dangerous to use postgres user to carry out daily activities in the PostgreSQL database.

References

commandprompt.com
stackoverflow.com
w3resource.com

How to Manage a User in PostgreSQL?

written by sysadmin | 26 November 2025

The previous article explained the basic commands in the PostgreSQL database. This article will explain how to set up

a user in PostgreSQL.

Problem

How to manage a user in PostgreSQL?

Solution

By default, PostgreSQL runs MD5 encryption to save PostgreSQL user passwords in the pg_authid table. However, since PostgreSQL version 10 and later, PostgreSQL has added scram-sha-256 encryption, which is more secure compared to MD5 encryption. To use this encryption, you have to go to the **/etc/postgresql/18/main/postgresql.conf** file if you use PostgreSQL 18 and look for the word **scram-sha-256** in the file, and open the fence located to the left of the word so it looks like the one below:

```
password_encryption = scram-sha-256
```

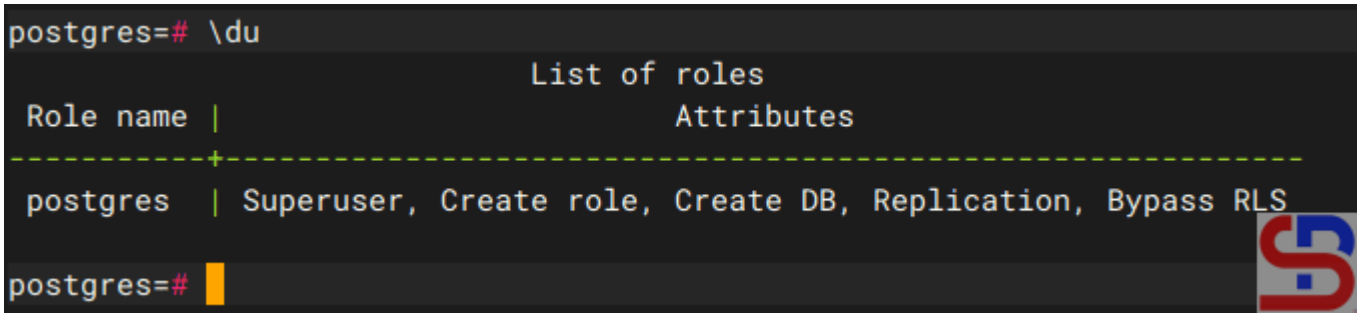
Then restart PostgresQL using the command:

```
sudo systemctl restart postgresql
```

A. List all users

To see all users in PostgreSQL, type the following command:

```
\du
```



List all users in PostgreSQL

By default, PostgreSQL uses the postgres user to access all databases in PostgreSQL.

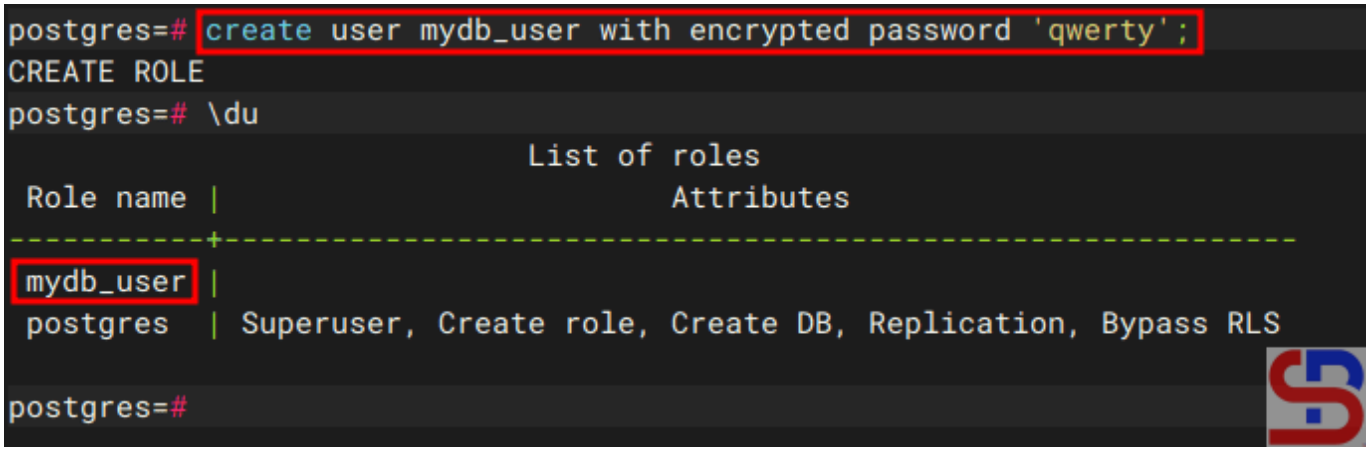
B. Create a new user

To create a new user in PostgreSQL, use the format below on the PostgreSQL server:

```
create user username with encrypted password 'your-password';
```

For example, if you want to create a mydb_user user with the password qwerty, then use the command below:

```
create user mydb_user with encrypted password 'qwerty';
```



Create a user in PostgreSQL

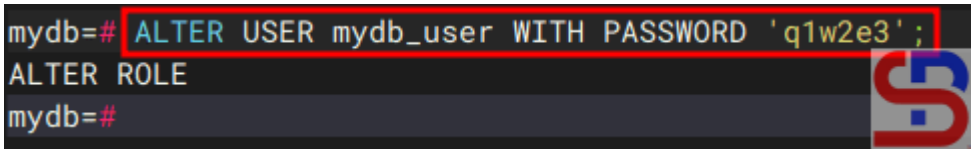
C. Change user password

To change the password in PostgreSQL, use the format below:

```
ALTER USER username WITH PASSWORD 'your_password';
```

For example, if you want to change the password for the mydb_user to q1w2e3, then use the command below:

```
ALTER USER mydb_user WITH PASSWORD 'q1w2e3';
```



Change the password in PostgreSQL

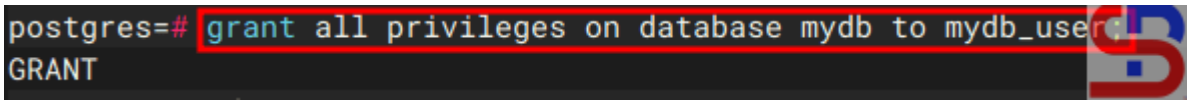
D. Create a user privilege

To give the user privileges for a database in PostgreSQL using the format below:

```
GRANT permission_type ON db_name TO username;
```

For example, in the previous article, you created a mydb database, so use the command below to grant all permission types:

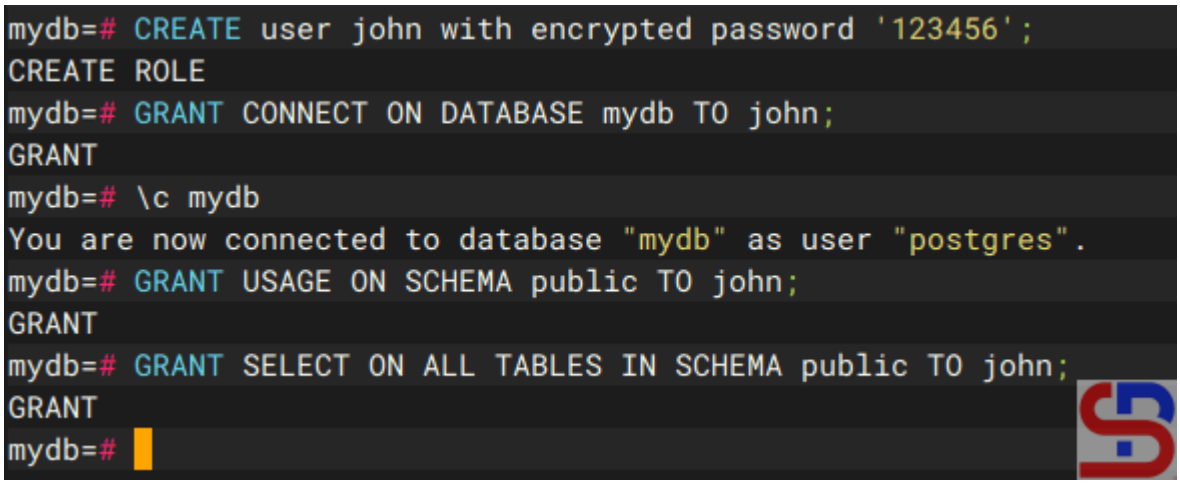
```
grant all privileges on database mydb to mydb_user;
```



Grant all to the user in PostgreSQL

If you want a user to only be able to view the mydb database for the sysadmin user, use the command below:

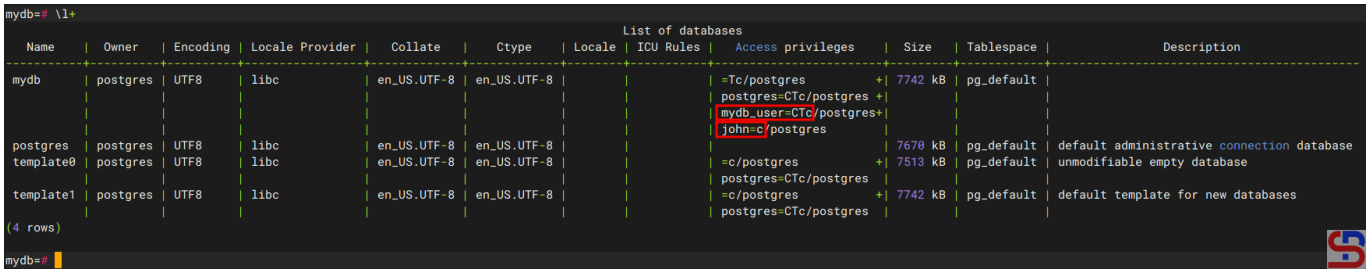
```
CREATE user john with encrypted password '123456';
GRANT CONNECT ON DATABASE mydb TO john;
\c mydb
GRANT USAGE ON SCHEMA public TO john;
GRANT SELECT ON ALL TABLES IN SCHEMA public TO john;
```



Grant viewer only in PostgreSQL

To see the grants you have made in PostgreSQL, use the command:

```
\l+
```



```
mydb=# \l+
                                                                    List of databases
   Name    |  Owner   | Encoding | Locale Provider |   Collate   |    Ctype    | Locale | ICU Rules |   Access privileges   |  Size   | Tablespace |                Description
-----------+----------+----------+-----------------+-------------+-------------+--------+-----------+-----------------------+---------+------------+--------------------------------------------
 mydb      | postgres | UTF8     | libc            | en_US.UTF-8 | en_US.UTF-8 |        |           | =Tc/postgres          +| 7742 kB | pg_default |
           |          |          |                 |             |             |        |           | postgres=CTc/postgres +|         |            |
           |          |          |                 |             |             |        |           | mydb_user=CTc/postgres+|         |            |
           |          |          |                 |             |             |        |           | john=c/postgres       |         |            |
 postgres  | postgres | UTF8     | libc            | en_US.UTF-8 | en_US.UTF-8 |        |           |                       | 7670 kB | pg_default | default administrative connection database
 template0 | postgres | UTF8     | libc            | en_US.UTF-8 | en_US.UTF-8 |        |           | =c/postgres           +| 7513 kB | pg_default | unmodifiable empty database
           |          |          |                 |             |             |        |           | postgres=CTc/postgres |         |            |
 template1 | postgres | UTF8     | libc            | en_US.UTF-8 | en_US.UTF-8 |        |           | =c/postgres           +| 7742 kB | pg_default | default template for new databases
           |          |          |                 |             |             |        |           | postgres=CTc/postgres |         |            |
(4 rows)

mydb=#
```

List all grants in PostgreSQL

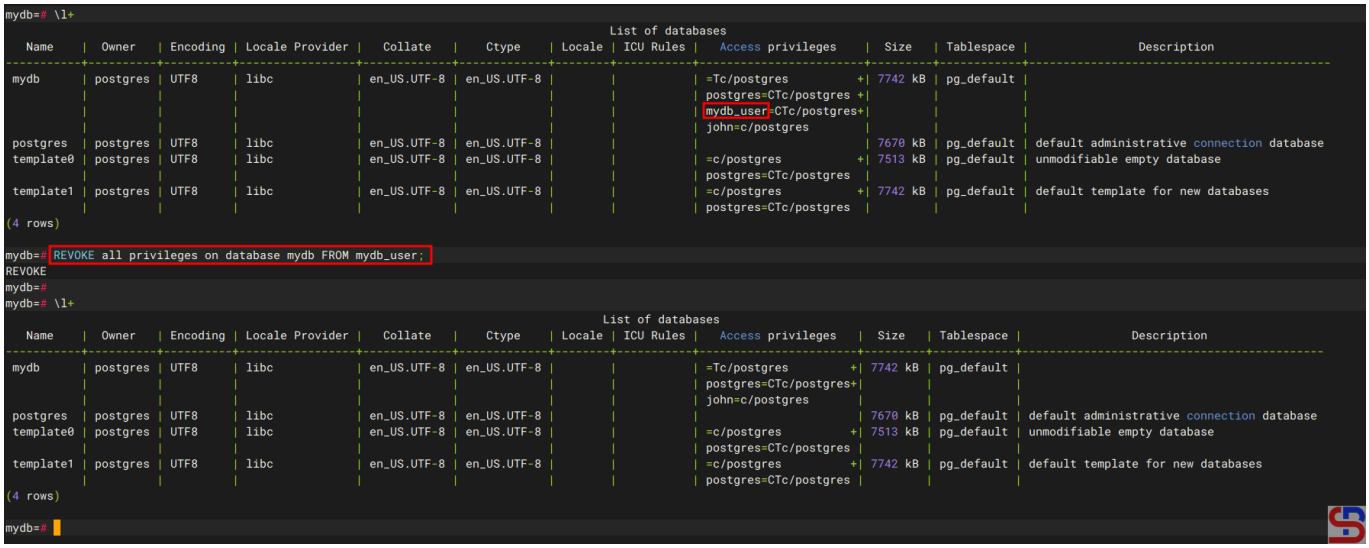
E. Remove a user privilege

If you want to remove a privilege from a user, you can use the format below:

```
REVOKE permission_type ON table_name FROM user_name;
```

For example, if you want to remove a privilege for mydb_user, use the command below:

```
REVOKE all privileges on database mydb FROM mydb_user;
```



```
mydb=# \l+
                                                                    List of databases
   Name    |  Owner   | Encoding | Locale Provider |   Collate   |    Ctype    | Locale | ICU Rules |   Access privileges   |  Size   | Tablespace |                Description
-----------+----------+----------+-----------------+-------------+-------------+--------+-----------+-----------------------+---------+------------+--------------------------------------------
 mydb      | postgres | UTF8     | libc            | en_US.UTF-8 | en_US.UTF-8 |        |           | =Tc/postgres          +| 7742 kB | pg_default |
           |          |          |                 |             |             |        |           | postgres=CTc/postgres +|         |            |
           |          |          |                 |             |             |        |           | mydb_user=CTc/postgres+|         |            |
           |          |          |                 |             |             |        |           | john=c/postgres       |         |            |
 postgres  | postgres | UTF8     | libc            | en_US.UTF-8 | en_US.UTF-8 |        |           |                       | 7670 kB | pg_default | default administrative connection database
 template0 | postgres | UTF8     | libc            | en_US.UTF-8 | en_US.UTF-8 |        |           | =c/postgres           +| 7513 kB | pg_default | unmodifiable empty database
           |          |          |                 |             |             |        |           | postgres=CTc/postgres |         |            |
 template1 | postgres | UTF8     | libc            | en_US.UTF-8 | en_US.UTF-8 |        |           | =c/postgres           +| 7742 kB | pg_default | default template for new databases
           |          |          |                 |             |             |        |           | postgres=CTc/postgres |         |            |
(4 rows)

mydb=# REVOKE all privileges on database mydb FROM mydb_user;
REVOKE
mydb=#
mydb=# \l+
                                                                    List of databases
   Name    |  Owner   | Encoding | Locale Provider |   Collate   |    Ctype    | Locale | ICU Rules |   Access privileges   |  Size   | Tablespace |                Description
-----------+----------+----------+-----------------+-------------+-------------+--------+-----------+-----------------------+---------+------------+--------------------------------------------
 mydb      | postgres | UTF8     | libc            | en_US.UTF-8 | en_US.UTF-8 |        |           | =Tc/postgres          +| 7742 kB | pg_default |
           |          |          |                 |             |             |        |           | postgres=CTc/postgres+|         |            |
           |          |          |                 |             |             |        |           | john=c/postgres       |         |            |
 postgres  | postgres | UTF8     | libc            | en_US.UTF-8 | en_US.UTF-8 |        |           |                       | 7670 kB | pg_default | default administrative connection database
 template0 | postgres | UTF8     | libc            | en_US.UTF-8 | en_US.UTF-8 |        |           | =c/postgres           +| 7513 kB | pg_default | unmodifiable empty database
           |          |          |                 |             |             |        |           | postgres=CTc/postgres |         |            |
 template1 | postgres | UTF8     | libc            | en_US.UTF-8 | en_US.UTF-8 |        |           | =c/postgres           +| 7742 kB | pg_default | default template for new databases
           |          |          |                 |             |             |        |           | postgres=CTc/postgres |         |            |
(4 rows)

mydb=#
```

Revoke all grants from a user

Or, use the below command if you want to revoke from user john:

```
REVOKE CONNECT on database mydb FROM john;
```

```
mydb=# \l+
                                                                    List of databases
   Name    |  Owner   | Encoding | Locale Provider |   Collate   |    Ctype    | Locale | ICU Rules |   Access privileges   |  Size   | Tablespace |                Description
-----------+----------+----------+-----------------+-------------+-------------+--------+-----------+-----------------------+---------+------------+--------------------------------------------
 mydb      | postgres | UTF8     | libc            | en_US.UTF-8 | en_US.UTF-8 |        |           | =Tc/postgres         +| 7742 kB | pg_default |
           |          |          |                 |             |             |        |           | postgres=CTc/postgres+|         |            |
           |          |          |                 |             |             |        |           | john=c/postgres       |         |            |
 postgres  | postgres | UTF8     | libc            | en_US.UTF-8 | en_US.UTF-8 |        |           |                       | 7670 kB | pg_default | default administrative connection database
 template0 | postgres | UTF8     | libc            | en_US.UTF-8 | en_US.UTF-8 |        |           | =c/postgres          +| 7513 kB | pg_default | unmodifiable empty database
           |          |          |                 |             |             |        |           | postgres=CTc/postgres |         |            |
 template1 | postgres | UTF8     | libc            | en_US.UTF-8 | en_US.UTF-8 |        |           | =c/postgres          +| 7742 kB | pg_default | default template for new databases
           |          |          |                 |             |             |        |           | postgres=CTc/postgres |         |            |
(4 rows)

mydb=# REVOKE CONNECT on database mydb FROM john;
REVOKE
mydb=# \l+
                                                                    List of databases
   Name    |  Owner   | Encoding | Locale Provider |   Collate   |    Ctype    | Locale | ICU Rules |   Access privileges   |  Size   | Tablespace |                Description
-----------+----------+----------+-----------------+-------------+-------------+--------+-----------+-----------------------+---------+------------+--------------------------------------------
 mydb      | postgres | UTF8     | libc            | en_US.UTF-8 | en_US.UTF-8 |        |           | =Tc/postgres         +| 7742 kB | pg_default |
           |          |          |                 |             |             |        |           | postgres=CTc/postgres |         |            |
 postgres  | postgres | UTF8     | libc            | en_US.UTF-8 | en_US.UTF-8 |        |           |                       | 7670 kB | pg_default | default administrative connection database
 template0 | postgres | UTF8     | libc            | en_US.UTF-8 | en_US.UTF-8 |        |           | =c/postgres          +| 7513 kB | pg_default | unmodifiable empty database
           |          |          |                 |             |             |        |           | postgres=CTc/postgres |         |            |
 template1 | postgres | UTF8     | libc            | en_US.UTF-8 | en_US.UTF-8 |        |           | =c/postgres          +| 7742 kB | pg_default | default template for new databases
           |          |          |                 |             |             |        |           | postgres=CTc/postgres |         |            |
(4 rows)

mydb=#
```

Revoke connect only from a user

F. Delete a user

Use the format below to delete a user in PostgreSQL:

```
DROP USER username;
```

If you want to delete mydb_user, use the command below:

```
DROP user mydb_user;
```

```
mydb=# DROP user mydb_user;
ERROR:  role "mydb_user" cannot be dropped because some objects depend on it
DETAIL:  privileges for database mydb
mydb=#
```

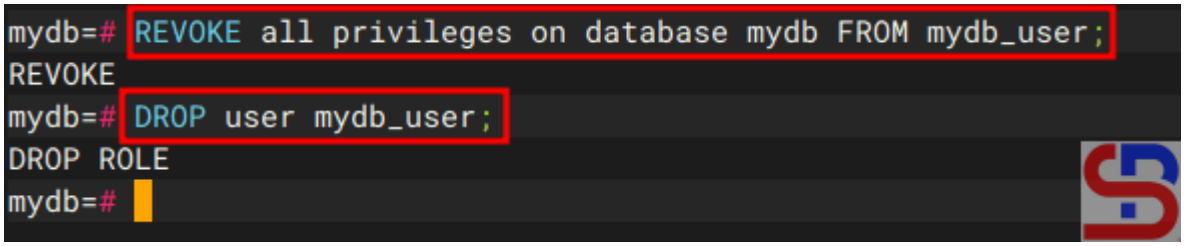
Error when dropping a user in PostgreSQL

You can see from the image above, there is an error when you want to delete a user. So, you have to remove some objects that depend on it. Use the command below:

```
REVOKE all privileges on database mydb FROM mydb_user;
```

and then delete the user using the below command:

```
DROP user mydb_user;
```

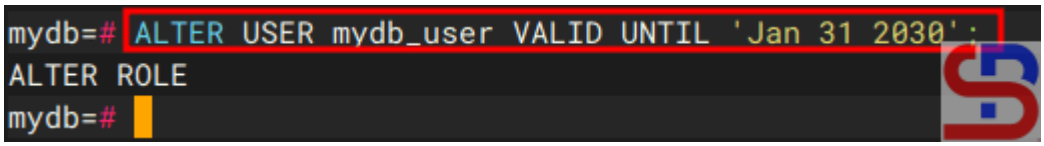


Drop a user in PostgreSQL

Note

If you want a user to only be able to access the PostgreSQL database for a certain time, for example, until January 31, 2030, use the command below:

```
ALTER USER mydb_user VALID UNTIL 'Jan 31 2030';
```



Provides time constraints for users in PostgreSQL

References

medium.com
datacamp.com
digitalocean.com
sentry.io

How to Manage a Database and its Table(s) in PostgreSQL?

written by sysadmin | 26 November 2025

The previous article explained how to install a PostgreSQL database on Linux. This article will explain the basics of commands in a PostgreSQL database.

Problem

How to manage a database and its table(s) in PostgreSQL?

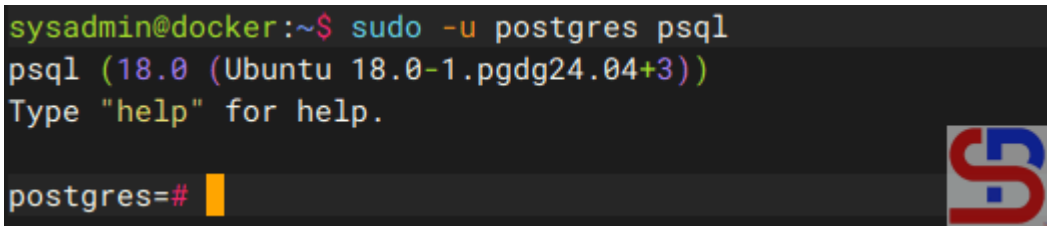
Solution

Below are the basic commands of PostgreSQL to manage a database and its table(s):

1. Access to the PostgreSQL database

Use the command below to access PostgreSQL:

```
sudo -u postgres psql
```



Access to the PostgreSQL

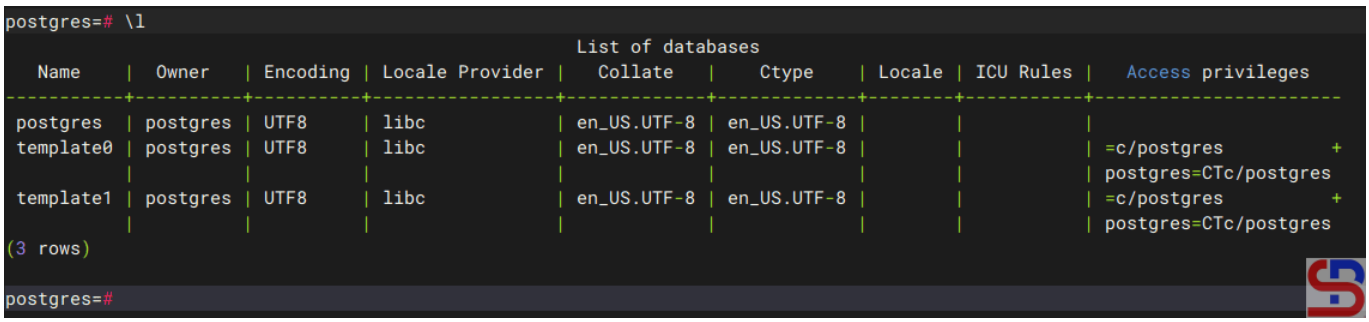
INFO

The use of capital letters in this article is only to distinguish between original commands from PostgreSQL and data from the user. You don't have to use the capital letters when running these commands, but you can use all lowercase letters.

2. List all databases

Use the command below to list all databases in PostgreSQL:

```
\l
```



List all databases

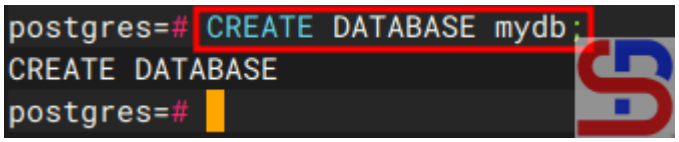
3. Creating a new database

Use the format below to create a new database:

```
CREATE DATABASE database_name;
```

You can see the options for this command on this page. For example, if you want to create a new database called **mydb**, use the command below;

```
CREATE DATABASE mydb;
```



Create a new database

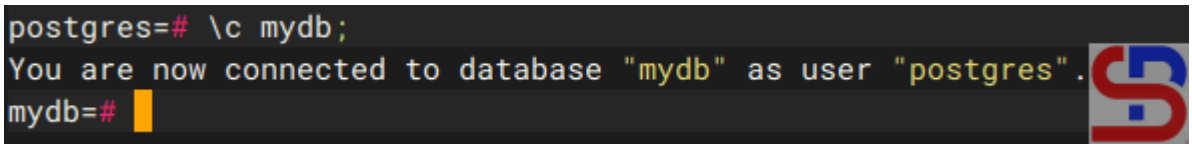
4. Connect to the database

Use the format below to connect to the database:

```
\c db_name;
```

For example, if you want to connect to the mydb database, type the following command:

```
\c mydb;
```



Connect to the database

5. Create a table

Use the format below to create a new table:

```
CREATE TABLE table_name (name_of_column1 column_data_type1, name_of_column2 column_data_type2, …);
```

You can see the options for this command on this page. Type the command below to create an employee table:

```
CREATE TABLE employee (name varchar (100), age int);
```

```
mydb=# CREATE TABLE employee (name varchar (100), age int);
CREATE TABLE
mydb=#
```

Create a table

6. Display all tables

Use the command below to display all the tables:

```
\dt
```

```
mydb=# \dt
            List of tables
 Schema |   Name   | Type  |  Owner
--------+----------+-------+----------
 public | employee | table | postgres
(1 row)

mydb=#
```

Display all table

7. Display the table structure

Use the format below to display the table structure:

```
\d table_name;
```

For example, if you want to display the employee table structure, run the command below:

```
\d employee;
```

```
mydb=# \d employee
                    Table "public.employee"
 Column |          Type          | Collation | Nullable | Default
--------+------------------------+-----------+----------+---------
 name   | character varying(100) |           |          |
 age    | integer                |           |          |

mydb=#
```

Describe a table

If you want to display more information about the table, type the command below:

```
\d+ employee;
```

```
mydb=# \d+ employee
                                        Table "public.employee"
 Column |          Type          | Collation | Nullable | Default | Storage  | Compression | Stats target | Description
--------+------------------------+-----------+----------+---------+----------+-------------+--------------+-------------
 name   | character varying(100) |           |          |         | extended |             |              |
 age    | integer                |           |          |         | plain    |             |              |
Access method: heap

mydb=#
```

Display more information in a table

8. Add the column

Use the format below to make a column in the table:

```
ALTER TABLE table_name ADD column column_name type(nnn);
```

You can see the options for this command on this page. For example, if you want to add to the city column in the employee table, use the command below:

```
ALTER TABLE employee ADD column city varchar(100);
```

```
mydb=# \d employee
                    Table "public.employee"
 Column |          Type          | Collation | Nullable | Default
--------+------------------------+-----------+----------+---------
 name   | character varying(100) |           |          |
 age    | integer                |           |          |

mydb=# ALTER TABLE employee ADD column city varchar(100);
ALTER TABLE
mydb=# \d employee
                    Table "public.employee"
 Column |          Type          | Collation | Nullable | Default
--------+------------------------+-----------+----------+---------
 name   | character varying(100) |           |          |
 age    | integer                |           |          |
 city   | character varying(100) |           |          |

mydb=#
```

Add a column

9. Insert data into the table

Use the format below to enter data in a table:

```
INSERT INTO table_name (Column1, Column2,…, ColumnN) VALUES (Value1,…ValueN), (Value1,…ValueN);
```

You can see the options for this command on this page. Type the command below if you want to insert 2 data to the employee table:

```
INSERT INTO employee (name,age,city) VALUES ('bob',21,'New York'), ('John',22,'Chicago');
```

```
mydb=# INSERT INTO employee (name,age,city) VALUES ('bob',21,'New York'), ('John',22,'Chicago');
INSERT 0 2
mydb=#
```

Insert data

INFO

If you want to insert a value in the form of a number, the number does not have to be flanked with an apostrof (‘…’) sign, whereas if it is a character or a combination of characters and numbers, it must be flanked with an

apostrof (‘…’).

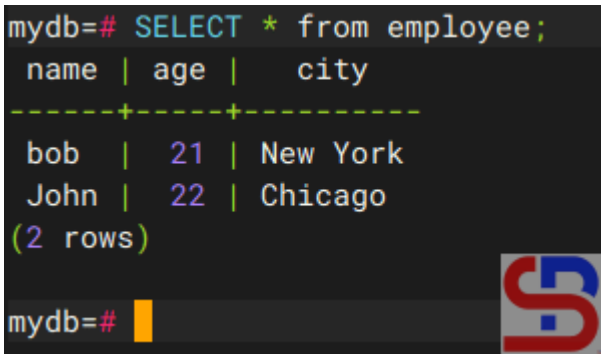
10. Displays data in a table

Use the format below to display all data in a table:

```
SELECT option1 FROM table_name option2;
```

You can see the options for this command on this page. For example, use the command below to display all data in the employee table:

```
SELECT * from employee;
```



Display the data

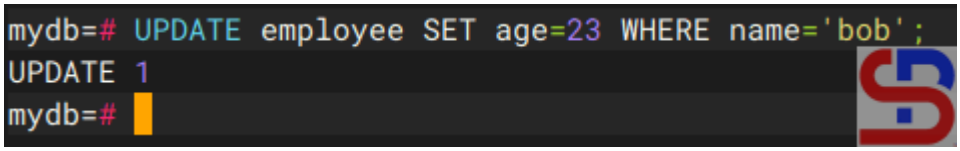
11. Update data

Use the format below to update data in a table:

```
UPDATE table_name SET columnX=valueX WHERE columnY=valueY;
```

You can see the options for this command on this page. For example, if you want to update the age of the employee named Bob, use the command below:

```
UPDATE employee SET age=23 WHERE name='bob';
```



Update the data

12. Delete data

Use the format below to delete one or more rows of a table:

```
DELETE FROM table_name WHERE column=value;
```

You can see the options for this command on this page. For example, if you want to delete the data where the user is in Chicago, use the command below:

```
DELETE FROM employee WHERE city='Chicago';
```

```
mydb=# SELECT * from employee;
 name | age |   city
------+-----+----------
 John |  22 | Chicago
 bob  |  23 | New York
(2 rows)

mydb=# DELETE FROM employee WHERE city='Chicago';
DELETE 1
mydb=# SELECT * from employee;
 name | age |   city
------+-----+----------
 bob  |  23 | New York
(1 row)

mydb=#
```

Delete the data

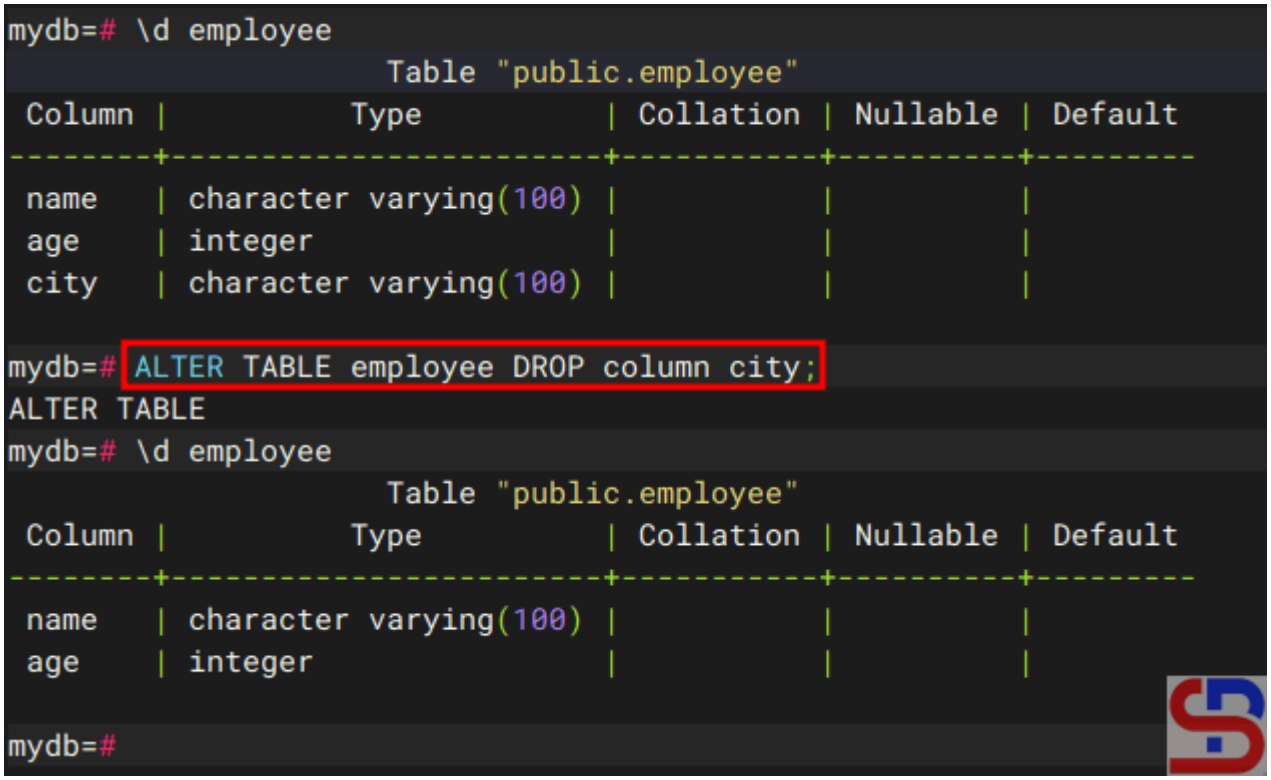
13. Delete the column

Use the format below to make changes in the table:

```
ALTER TABLE db_name DROP COLUMN column_name;
```

If you want to delete the column, for example, city, you can use the following command:

```
ALTER TABLE employee DROP COLUMN city;
```



Delete the column

14. Empty the table

You can delete all data in a table with the format as below:

```
TRUNCATE table_name;
```

You can see the options for this command on this page. For example, if you want to delete all the data in the employee table, type the command below:

```
TRUNCATE employee;
```

```
mydb=# SELECT * from employee;
 name | age
------+-----
 bob  |  23
(1 row)

mydb=# TRUNCATE employee;
TRUNCATE TABLE
mydb=# SELECT * from employee;
 name | age
------+-----
(0 rows)

mydb=#
```

Truncate the table

15. Change a table name

You can change the name of the table using the format below:

```
ALTER TABLE old_table_name RENAME TO new_table_name;
```

You can see the options for this command on this page. Use the command below if, for example, you want to change the name of the employee table to employees:

```
ALTER TABLE employee RENAME TO employees;
```

```
mydb=# \dt
 public | employee | table | postgres

mydb=# ALTER TABLE employee RENAME TO employees;
ALTER TABLE
mydb=# \dt
 public | employees | table | postgres

mydb=#
```

Rename the table

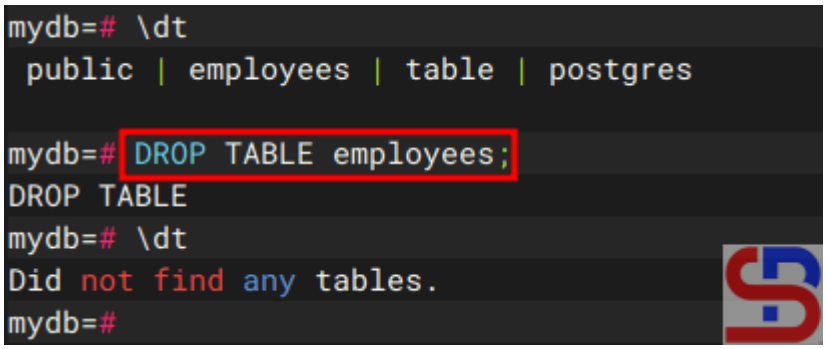
16. Delete a table

Use the format below to delete a table:

```
DROP TABLE table_name;
```

You can see the options for this command on this page. For example, if you want to delete the employee table, use the command below:

```
DROP TABLE employees;
```



Delete the table

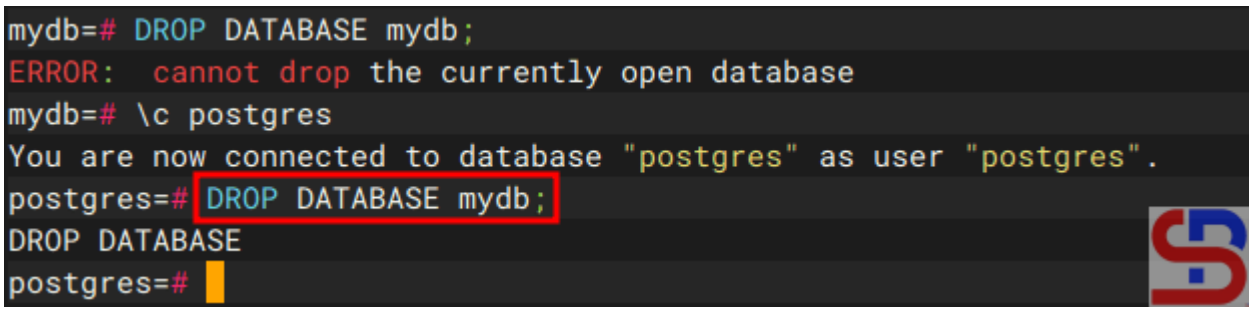
17. Delete a database

To delete a database, use the format below:

```
DROP DATABASE database_name;
```

You can see the options for this command on this page. For example, if you want to delete the mydb database, type the command below:

```
DROP DATABASE mydb;
```

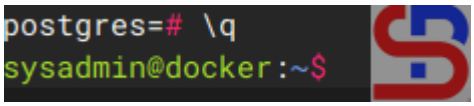


Delete the database

17. Quit from the database

To quit from the database, run the command below:

```
\q
```



Quit from the database

Note

Actually, the basic commands for PostgreSQL and MariaDB are almost the same, with only there is a slight difference between the two databases.

References

hasura.io
postgresql.org
w3schools.com
geeksforgeeks.org

How to Restore the Database in MariaDB?

written by sysadmin | 26 November 2025

The previous articles have explained how to perform a database backup in MariaDB. This article will explain how to perform a database restore in MariaDB.

Problem

How to restore the database in MariaDB?

Solution

There are several methods to perform the database restore in MariaDB:

1. Restore the entire database

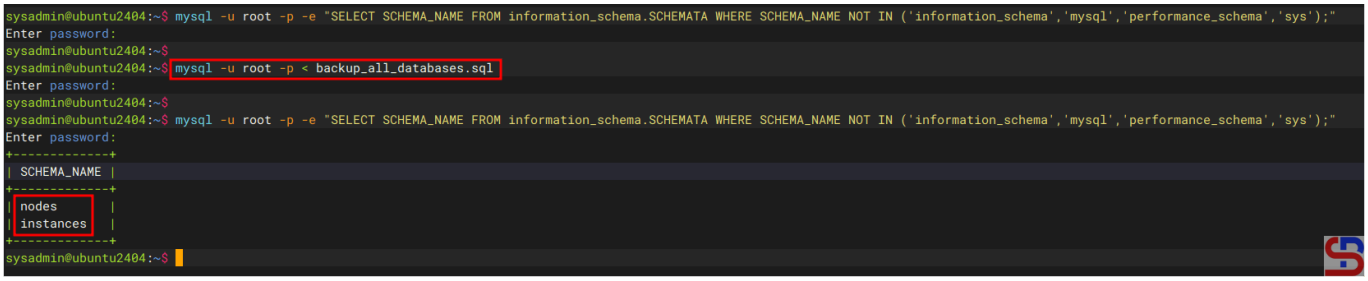
To restore the backup file of the entire database, use the format below:

```
mysql -u username -p < backup_file.sql
```

Use the command below if your backup file name is backup_all_databases.sql:

```
mysql -u root -p < backup_all_databases.sql
```

After you run the above command, the database will be restored in MariaDB as shown in the image below:



Restore all databases in MariaDB

2. Restore a database

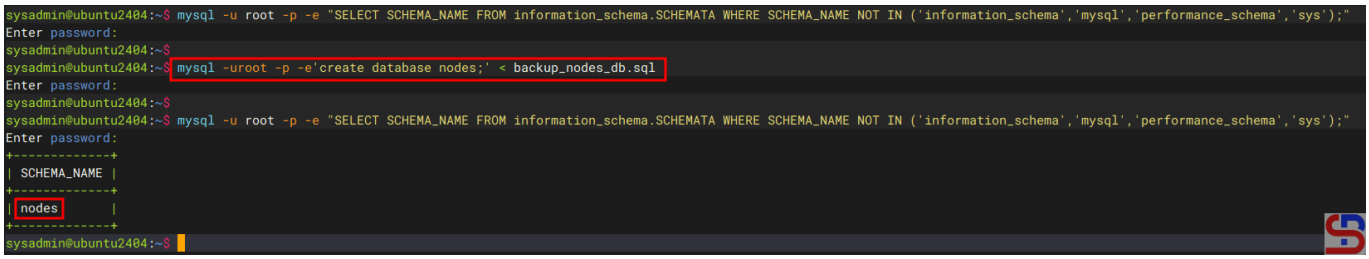
Use the following format to restore a database's backup file:

```
mysql -u username -p -e'create database new_database;' < backup_file.sql
```

If you want to restore the nodes database, then you can use the command below:

```
mysql -uroot -p -e'create database nodes;' < backup_nodes_db.sql
```

After you run the command above, MariaDB will restore the database like in the image below:



Restore a database in MariaDB

3. Restore the table(s)

If you want to restore the table(s), you can follow the format below:

```
mysql -u username -p db_name < table_backup_file.sql
```

So, use the command below if you want to restore the tables in the nodes database:

```
mysql -u root -p nodes < table_backup_file.sql
```

4. Restore a compressed backup file

There are two methods to restore a compressed backup file:

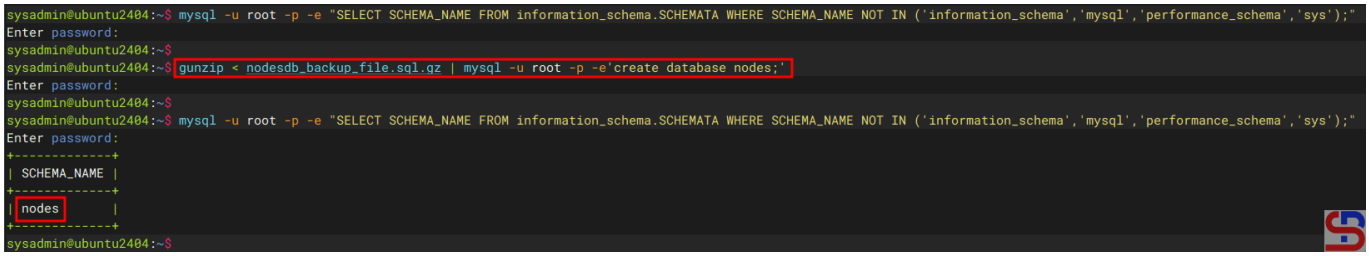
a. Restore the .gz backup file

If you want to restore a .gz backup file, use the format below:

```
gunzip < database.sql.gz | mysql -u username -p -e'create database new_database;'
```

For example, if you want to restore a database that uses .gz compression, then use the command below:

```
gunzip < nodes_backup_db.sql.gz | mysql -u root -p -e'create database nodes;'
```



Restore a database that is compressed using .gz compression

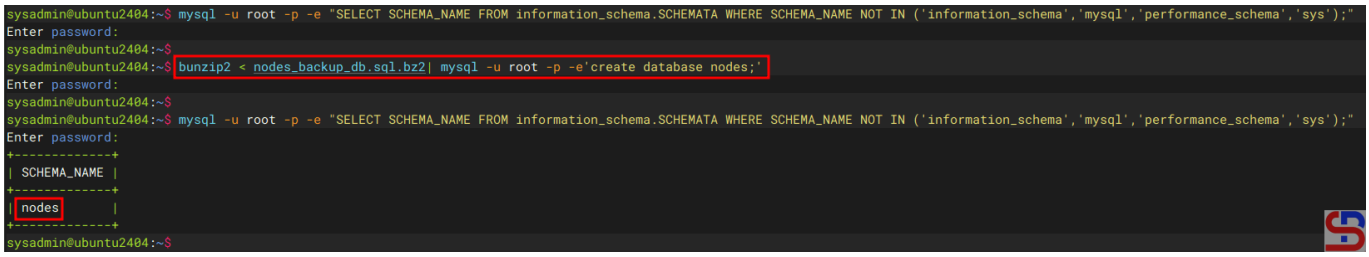
b. Restore the .gz backup file

If you want to restore a .bz2 backup file, use the format below (but make sure your server has already installed the bzip2 package):

```
bunzip2 < database.sql.bz2 | mysql -u username -p -e'create database new_database;'
```

For example, if you want to restore a database that uses .bz2 compression, then use the command below:

```
bunzip2 < nodes.sql.bz2 | mysql -u root -p -e'create database nodes;'
```



Restore a database that is compressed using .bz2 compression

Note

You can restore a database backup file that is compressed using method number 4, whether you compress when backing up the database or after backing up the database.

References

mariadb.com
stackoverflow.com
serverfault.com

How to Back up the Database in MariaDB?

written by sysadmin | 26 November 2025

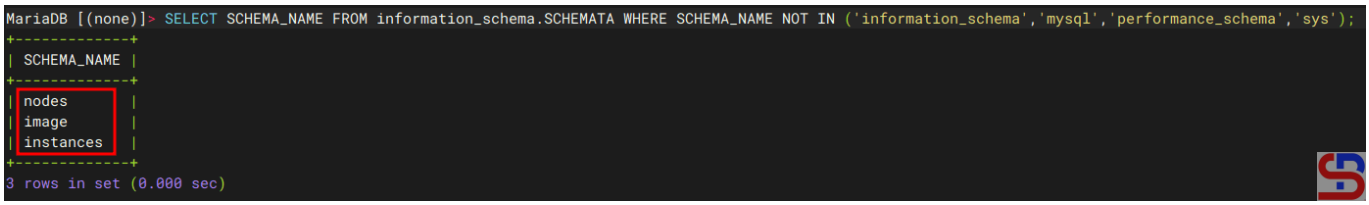
I want to back up the database in MariaDB.

Problem

How to back up the database in MariaDB?

Solution

Before doing a backup, it is highly recommended to ensure that there are no transactions in the database. Maybe you can turn off the application that is connected to the database or turn off the connection to the database so that it will produce a good backup file. In this article, I have 3 databases to use as an example, like the image below:



Example of databases

And below are the commands to back up the MariaDB database:

1. Back up the entire database

If you want to back up all databases in MariaDB, use the format below:

```
mariadb-dump -u username -p --all-databases > backup_file_name.sql
```

So, run the command below to back up your entire database:

```
mariadb-dump -u root -p --all-databases > backup_all_databases.sql
```

2. Backup a database

If you want to back up a database in MariaDB, use the format below:

```
mariadb-dump -u username -p db_name > backup_file_name.sql
```

So, run the command below if you want to back up the nodes database:

```
mariadb-dump -u root -p nodes > backup_nodes_db.sql
```

3. Backup more than one database

If you want to back up more than one database, use the format below:

```
mariadb-dump -u username -p db1_name db2_name > backup_file_name.sql
```

So, if you want to back up the nodes and image databases, use the format below:

```
mariadb-dump -uroot -p --databases nodes image >
backup_nodes_and_image_db.sql
```

4. Backup database only

When you back up a database, by default, the database will be backed up in its entirety, both the database and the database structure. But sometimes you just want to back up the database without the structure, so you can use the format below:

```
mariadb-dump -u username -p --no-create-db --no-create-info db_name >
```

```
dbname_db_only.sql
```

So, if you want to back up the database only for the nodes database, you can use the command below:

```
mariadb-dump -u root -p --no-create-db --no-create-info nodes > nodes_db_only.sql
```

5. Backup the database structure only

If you want to back up the database structure only, without the need to back up the database, then you can use the format below:

```
mariadb-dump -u username -p -—no-data db_name > dbname_structure_only.sql
```

So, use the command below if you want to back up the structure only for the nodes database:

```
mariadb-dump -u root -p --no-data nodes > nodes_structure_only.sql
```

6. Backup table only

If you want to back up the specific table only in a database, you can use the format below:

```
mariadb-dump -u username -p db_name table1 table2 > backup_table1_table2_dbname.sql
```

So, if you want to back up 2 tables in the nodes database for babel and category tables, use the command below:

```
mariadb-dump -uroot -p nodes babel category > backup_babel_category_nodes.sql
```

7. Backup with compression

By default, when people perform database backups, they will usually use .sql as an extension of the database backup

file. But actually, you can compress the database backup files when you do a backup. There are 2 methods of compressing database backups, namely using the tar.gz method and the .bz2 method. If you want to use the first method, use the format below:

```
mariadb-dump -u username -p db_name | gzip -9 -c > db_backup_file.sql.gz
```

Suppose you want to compress the nodes database, then use the command below:

```
mariadb-dump -u root -p nodes | gzip -9 -c > nodesdb_backup_file.sql.gz
```

And if you want to use bz2 compression when backing up databases, then make sure that the bz2 package is already installed on your server. If the package is not already installed, use the command below:

RockyLinux/AlmaLinux/CentOS

```
dnf install bzip2
```

Ubuntu/Debian

```
sudo install bzip2
```

OpenSUSE

```
zypper install bzip2
```

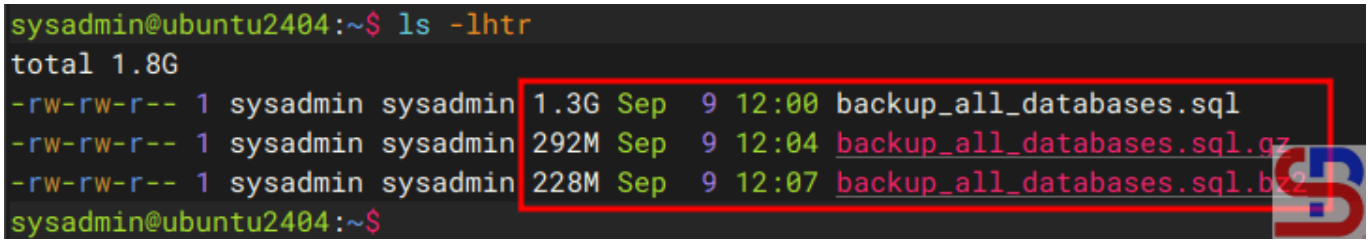
After you install the package, try to back up your database using the format below:

```
mariadb-dump -u username -p db_name | bzip2 > database.sql.bz2
```

If you want to back up your database, for example nodes database, run the below command:

```
mariadb-dump -u root -p nodes | bzip2 > nodes_backup_db.sql.bz2
```

Below is a comparison image of the size of the backup file that does not use compression, uses .tar.gz compression, and .bz2 compression:



Comparison size file

Warning
If you use compression when backing up the database, it will take longer than if you don’t use compression. And if you use bz2 compression, then the time spent will be longer than using .tar.gz.

Note

You should know that the mariadb-dump command has many useful options, including the **--single-transaction** and **--lock-tables** options. If you have a database that uses the **InnoDB storage engine**, then you should use the **--single-transaction** option because this option starts a transaction before dumping and reads data from a consistent snapshot without locking the tables for extended periods, allowing concurrent reads and writes. However, if you are using the **MyISAM** storage engine, you can use the **--lock-tables** option when backing up the database in MariaDB. If your database has a different storage engine, it is recommended to back up the database partially; some tables that use InnoDB use the --single-transaction option, and some tables that use MyISAM use the --lock-tables option when backing up the database.

References

mariadb.com
tecmint.com
linode.com
serversforhackers.com